

[HIGH-SPEED DATA-RATE CONVERTING AND SWITCHING CIRCUIT]

Abstract

A high speed bi-directional data rate conversion circuit converts 1x data rate signals from attached devices on port A and port B to 2x data rate signals on bus C and further converts 2x high speed data rate signals on bus C to 1x data rate signals on ports A and B for memory devices attached to ports A and B. The usage of pass gate switches and combination of latches and counters is used to permit proper synchronization of the data signals, and to further generate strobe signals at both system bus and memory bus sides, and to further generate data mask signals for writing to the memory bus side of the circuit. The collection of such switching elements and latches are provided on a single silicon chip which includes of the functions of the invention..